# The Santonian–early Campanian biota from the Ola volcanic plateau (Magadan region, Russia)

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During the Late Cretaceous, the northeastern margin of Asia was an area of intensive volcanic activity. During this time huge volumes of volcanic rocks were erupted and formed a massive mountain ridge, which extended up to 3000 km in longitudinal direction. This geological structure has been named as the Okhotsk-Chukotka volcanic belt. The Ola Formation is distributed near Magadan city and consists of ignimbrites and rhyolite tuffs and flows. Its age has been estimated as the Santonian–early Campanian on the base of isotope and paleomagnetic dating. This formation is overlain by basalts of the Mygdykit Formation, which forms the Ola volcanic plateau and protects the Ola Formation from erosion. The upper part of the Ola formation yielded several localities with abundant fossil insects, crustaceans and plants, that are preserved in lake sediments. The Ola flora contains cryptogam plants (club-mosses, horsetails and ferns), conifers, czekanowskialeans, cycadophytes, ginkgophytes and sparse angiosperms. The Late Cretaceous floras of nearest coastal lowlands were dominated by angiosperms. They are characterized by predominance of broad-leaved Platanaceae (*Pseudoprotophyllum, Paraprotophyllum, Arthollia*), Cercidiphyllaceae (*Trochodendroides*) and diverse Cupressaceae (*Sequoia, Metasequoia, Taxodium*).

The fossil plants from the Ola plateau localities are represented mostly by diverse Pinaceae and Cupressaceae with needle-shaped, falcate or squamiform leaves. Records of flowering plants are surprisingly scarce. Only the aquatic plant *Quereuxia* was a common component of floristic complexes. Except for this genus few small leaves of *Trochodendroides* and, possibly, leaves of two other extinct angiosperm genera were found. Animals and plants represent members of unusual mountain biota, which existed on the plateau between two stages of volcanic activity. This habitat was isolated from the coastal lowlands, and its vegetation was significantly different. In the Santonian–early Campanian the surface of the Ola volcanic plateau was covered by thermophilic conifer vegetation. Higher and drained places were occupied by pinaceous forest with *Taeniopteris* shrubs in undergrowth, whereas lake shores were covered by Cupressaceae forest with horsetails, ferns and a mixture of flowering plants. Lacustrine biota are represented by aquatic plants (*Quereuxia* and *Lokyma*), conchostracans and numerous larvae of insects. The late Campanian massive effusion of basalt lava flows dramatically finished the existence of these biota.